GREATLANDER top hatch Automatic Multi-Stage Incubator

- **With New & Improved MX18 Computer-Controller**
- **Unique Separate & Filtered Hatching Chamber**
- **External Water Filling, Ready to connect to Mains or Header Tank**
- **Dual-Mode Humidity Modulation: Water Vapour OR Micro-Mist**
- **Sanitising Function**

Your Greatlander incubator provides unparalleled levels of control such that it requires some technical aptitude to operate it at its optimum. User support is always available while you gain confidence.

GREATLANDER top hatch Automatic Multi-function Incubators are the result of extensive research with experienced Australian breeders. They are produced to tight commercial-hatchery standards and specifications. Your incubator utilises the most up-to-date micro-electronic technology available, in addition to fine sensing and highly accurate digital temperature sensors and moisture sensitive capacitance humidity sensors. The logic controller intelligently performs all the background functions essential to a successful hatch.

Each incubator is pre-run and adjusted for your approximate location/season/species at Greatlander Brisbane. The auto turning movement is timed for each incubator and the duration of power-on for the turning movement is adjusted to match. These unique settings are provided with your incubator. Keep them with these instructions.

In addition the controller has in its permanent memory an approximation of values to suit most poultry and bird eggs in most regions. These in-memory default values are easily accessed by re-setting the controller, see Page5.

Your incubator is stable and reliable, saving you effort and time. It is the most advanced incubation equipment available in its class for propagation of all types of poultry and rare birds for the smallest to the largest hatchery.

Working Conditions & Environment:

- Working Voltage: AC 240V, 50HZ.

  Over-Voltage spikes may damage your set and void your warranty – Use a Surge Protector

- Ambient Temperature: -10～37.8℃ - Relative Humidity: less than 85% RH
- In Daytime Temperatures above 25℃, Open some Vents
- In Hot & Dry Weather, use the Micro-Mist Pump instead of the Immersion Heater

DOs & DON'Ts: for your safety and the safety of your incubator:

- **DO** plug the set into its own Surge Protector in a socket on the RCD/ELCB-protected circuit
- **If** running by a generator or non-protected supply, **DO** connect an earth-bond
- **DO** turn the incubator off and unplug from the wall when cleaning the cabinet interior.
- **DO** run the equalizing temperature fan continuously – switch off only for short periods. With the Fan OFF, heat will rise to the top of the set and damage electrical components
- **DO** monitor your incubator's water tray usage to ensure water is present at all times. If the water runs dry, the humidifier function continues unchecked, damaging components
- **DO** clean chick fluff diligently. It is an excellent conductor and has caused electrical fires

DOs & DON'Ts: for using your incubator correctly and at the start of each season:

- Read this instruction manual in addition to the FAQ pages on our website
- Locate the set in a cool and airy position with 30cm clearance at sides and back.

Avoid hot outbuildings and stuffy rooms. The set must be able to exchange air with the outside to work correctly. In calm warm weather, create a draught across the set.
Open the provided vents. Switch to cool micro-misting ***sparingly*** in hot and dry weather

- Check the set carefully for fasteners worked loose or parts lodged in the top of the set if it was transported on its back. Check the nuts that hold the fan.
- Ensure that the temperature sensor (pencil-shaped) is secured high to the fan carriage close to the controller.
- The humidity sensor (oblong shaped with slots) is shipped below the top rail of the egg carriage out of the fan's draught. If moved elsewhere in the cabinet ensure its slots face away from the draughts of fans.
- Remove the top water tray `do this out of the incubator' and test-plumb your chosen means of remote water filler, from gravity tank or mains supply, to test the assembly for joint leaks and that the float valve seals. Abnormally high mains pressure may need a break pressure cistern. Water should cover the immersion heater element by about 2cms. Adjust the float arm if necessary. Fit some netting on the bucket-end to stop debris from lodging in the valve seat, preventing it from sealing. For quarantine reasons we do not test with water.
- Before starting up, fill the water tray with warm water to give your set a head start.
- Cross-check the temperature at the egg rack, excluding egg-effect, with another reliable thermometer and if necessary, calibrate the temperature sensor. Refer Function F5, Page 5.
- Observe the set closely and if you have **any** concerns about its operation, **switch it OFF, OPEN the top hatch** so it cools down safely & contact GREATLANDER 0412750741
- Be prepared to wait until the incubator stabilises … it will take some time. To silence the alarm momentarily, Press the Down Arrow ▼ (It resets automatically)
- Do a trial run with some inexpensive eggs. Read and understand your warranty.

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OPERATION, GENERAL:

•**To turn on:** Plug the incubator into its own wall socket and turn Main & Fan On

•**To turn off (temporarily < 1min)**: Turn Main Switch Off (or switch off at the wall socket)

•**To Shut Down:** See Shut Down Instructions on Page 8 for how to cool-down safely.

•To switch the Interior Light On & Off, use the "Lighting" switch

•To switch the Sanitising Function On & Off, use the “Disinfect” switch

•To switch the Equal temp Fan Off & On, use the “Fan” switch if fitted. This switch is used only when opening the door to conserve heat/humidity/power. **Normally it must be ON**

INCUBATOR CONTROLLER QUICK USER-GUIDE

This is a quick reference guide to using your incubator controller.
To understand how best to use your controller you should read your manual.

▼ Down Arrow Button - Press and release, to mute the alarm

▲ Up Arrow Button - Press and hold, to turn the egg rack up or down

▼ | ▲ Up and Down Buttons - Press together and hold, to restore the factory default settings

SET - Press once to set the temperature then press OK, set the humidity, then press OK to exit

SET + ▲ – Press together to adjust the P Settings, see pages below

SET + ▼ – Press together to adjust the F Settings, see pages below

When finished, move the rack to the start position (Up arrow until it stops then back a short way)

Please run your machine through a surge protector.

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Run the incubator by the `Default’ method:

You may start by accepting the pre-set values and running your incubator.

Follow the Dos & Don’ts above. Use the ▲ Button to place the egg-rack in the start position, (see the instructions for this on page 6). Connect the external water filler to your chosen water supply. Monitor the incubator closely until it stabilizes temperature and humidity, and load your trial eggs. Monitor the water tray twice daily. Transfer the eggs to the hatching basket when it’s time to hatch.

When first turned on, the **bottom** row will be steady and may display the following

“Sv” (Set Values)

3	**8.**	**0**	**6**	**0**

Or it may display the values pre-set at Greatlander. E.g.

3	**7.**	**5**	**5**	**5**

This is the `Target' for Temperature & Humidity.

Meanwhile the **top** two screens will change constantly and display the actual Temperature & Humidity inside the incubator *at the probes*

"Pv"; (Present In-Cabinet Values)

*	*	*		*	*

It will take some time for the incubator to reach the Set Values. To silence the alarm momentarily, Press the Down Arrow ▼ (The alarm will reset automatically)

Adjust & Run the incubator by the `Less-recommended' method

You may arbitrarily Set your Values only for Temperature &/Or Humidity:

When you set the values of temperature and humidity manually, a micro-processor reads your input. It then uses your values to generate all other related values automatically.

When you manually change the value or pair of values for temperature and humidity, the controller will automatically change all the related values such as the cut-in and cut-out points of the heating elements, of the ventilating fan, and of the high and low alarms. For optimum performance you should `re-tune' your related settings. Refer to the next section and to your settings sheet for guidance.

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While the incubator is in the normal working state, Press the SET Button. The bottom display will show

*	*	*		t	t

It is waiting for a new "Temperature" value.
Press the ▼ & ▲ Buttons until you reach your desired Temperature then Press OK to save the new Temperature value.
The display will immediately show

	*	*		h	h

It is waiting for a new "Humidity" value. Press the ▼ & ▲ Buttons until you reach your desired Humidity then Press OK to save the new Humidity value.

The incubator returns to its normal working state and matches closely the new values. You should `re-tune' the Temp & RH related `P' settings - see comments above.

Run the incubator by the `Recommended' Method ***(Guided by your Settings Sheet)***

The controller's default values and those set at Greatlander are approximations only. Experienced users vary the settings during the course of a hatch and to suit species, and seasonal changes of the ambient conditions.

- ***To change only the Temperature, see below and adjust P2, P3 & P4 in a band.***
- ***To change only the Humidity, see below and adjust P8 & P9 in a band.***
- ***If you need to over-ride any of the other parameters, do so in small increments so you may observe the effects.***

Arbitrarily Set your Values of First Group of other Functions:

To enter into the **first** group of Arbitrarily Set Values Mode, while the incubator is in the normal working state, Press and Hold the SET Button and the ▲ Button simultaneously. The LED display will show the first Function to be set

-	-	-	P	1

You may scroll through the Functions by pressing the OK Button.

To change a Function's value press the ▼ & ▲ Buttons until you reach your desired value then Press OK to save the data and move automatically to the next Function

The List of Functions is as follows

P1 Over-Temperature Alarm – Sets the High Temperature for the Alarm to start
P2 Over-Temperature Value – Sets the High Temp for the Ventilating Fan to start
P3 Upper-Limit of Temperature – Sets the High Temperature for the Heating to stop
P4 Lower-Limit of Temperature – Sets the Low Temperature at which Heating starts
P5 Stand-By Heater – Sets the Low Temperature for the Stand-By Heater to start
P6 Low Temperature Alarm – Sets the Low Temperature at which the Alarm starts
P7 Over-Humidity Alarm – Sets the High RH at which the Alarm starts
P8 Upper-Limit Humidifier – Sets the High RH for the Humidifier to stop
P9 Lower-Limit Humidifier - Sets the Low RH for the Humidifier to start
PP Low Humidity Alarm – Sets the low RH at which the Alarm Starts
Press OK to return the Normal Working Mode

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Arbitrarily Set your Values of Second Group of other Functions:

To enter into the **second** group of Arbitrarily Set Values Mode, while the incubator is in the normal working state, Press and Hold the SET Button and the ▼ Button simultaneously. The LED display will show the first Function to be set

-	-	-	F	1

You may scroll through the Functions by pressing the OK Button.

To change a Function's value press the ▼ & ▲ Buttons until you reach your desired value then Press OK to save the data and move automatically to the next Function

The List of Functions is as follows

F1 Egg Turning Interval - Sets the Interval between successive turns in minutes
F2 Egg Turning Duration – Sets the Duration of the turning movement in seconds
F3 Ventilation Interval – Sets the Interval between ventilations in minutes
F4 Ventilation Duration – Sets the Duration of Ventilation in seconds
F5 Temperature Calibration – Corrects Variation between Probe and Actual Temp
F6 Humidity Calibration – Corrects Variation between Probe and Actual RH
F7 Egg Turning Counter – Displays the number of Turns Performed

Press OK to return the Normal Working Mode

Egg Turning Manually & To Horizontal:

Loading and Unloading of Egg-Trays is performed with the trays set to horizontal.

To initiate a Manual Turn, Press and Hold the ▲ Button. Watch the turning mechanism and the Up/Down LED lights on the panel ... you may need to toggle between Up & Down by lifting your finger momentarily and pressing and holding again. Release the button when the trays are at horizontal. After you perform manual turns (when loading/unloading trays), use the ▲ Button to turn the rack until it trips one of the limit switches then use the ▲ Button again to turn it back briefly so it is away and on its way back to the opposite limit switch. This tells the controller the direction of the `next' turn in addition to resuming the `timed F2' turns from the correct starting point.

Turning will resume automatically and the `original' sequence is recalled from memory.

If you wish to turn OFF automatic egg turning, set F2 to Zero. Use the Up Arrow ▲ to perform a manual turn.

Alarm Mute

To silence the alarm momentarily, Press the Down Arrow ▼. If you wish to reset the Alarm manually, press the ▼ Button.

Restore the `in-Memory' Factory Settings

Press and Hold Both ▲ & ▼ simultaneously for 3 seconds until the controller displays Zeros. The buzzer beeps and the controller restores the Factory settings such as

- Temperature = 38°C
- Relative Humidity = 60%
- Egg Turning Interval = 90 minutes
- Egg Turning Time = 180 seconds
- Ventilation Interval = 120 minutes
- Ventilation Duration = 30 seconds
- Egg Turning On/Off = Automatic

Equal Temp Fan Control

The fan must run continuously. *Switch off momentarily only when opening the door*.

Connecting to Filtered External Water tank or to Town-pressure Water

Greatlander incubators come equipped with a float valve capable of shutting the water supply against gravity-tank pressure as well as normal pressure town-water or domestic type pump-pressure. Some water if untreated may become discoloured in the tray. If a foreign body in the water lodges in the float valve, the tray will flood then run dry.

Sanitising Function Control

Toggle the `DISINFECT' switch.

Sanitising Function

Exposure to the 254nm UV lamp increases embryo viability by decreasing the

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microorganism load on the egg shell, and on the internal surfaces of the incubator equipment.
Set only eggs scraped clean but unwashed so as not to dissolve the cuticle.
Place each tray of fresh eggs on the top shelf, switch on the Sanitiser and perform a full +/- 45^{o} swing of the egg carriage. Take out, turn 180^{o} and re-insert the tray. Repeat the +/- 45^{o} swing of the egg carriage. When finished, use the manual turn to turn the rack until it trips one of the limit switches then turn it back briefly so it is away and on its way back to the opposite limit switch. This process tells the controller the direction of the `next' turn in addition to resuming the `timed F2' turns from the correct starting point.
Turning will resume automatically and the `original' sequence is recalled from memory.

A more thorough clean is achieved by placing the eggs sharp-end-up in a tray and treating as above. The tray is taken out and an empty tray is placed upside down on the eggs and both trays are inverted together. The new tray is then placed in the cabinet and the new faces treated as above. When finished, use the manual turn to turn the rack until it trips one of the limit switches then turn it back briefly so it is away and on its way back to the opposite limit switch. This process tells the controller the direction of the `next' turn in addition to resuming the `timed F2' turns from the correct starting point.
It is recommended that you run the Sanitiser daily to `Scrub' the air and the cabinet. Switch it on while doing two manual turns, ending as above.
The Sanitiser if used continuously has no harmful effect on embryos in the shell. However, it will degrade plastic materials. Do not look at the UV light and do not use the Sanitiser when chicks are hatching or hatched

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Ventilation
The controller `calls' the Ventilating Fan to control over-temperature and to replenish oxygen. Normally its flow is that of an `Exhaust Fan' and fresh air is normally drawn in gradually via small gaps and the vents. Monitor this over-temp activity and as daytime temps and the fan's activity increase, start opening vents.

If the ambient temperature is expected to reach 30^{o}C, switch to micro-misting mode
Hot daily temperatures are challenging for all incubators, especially while hatching.
a) The humidifier may be on for longer periods, if programmed to increased humidity
b) Using the Heated Element would warm the water in the tray, thus warming the air inside the cabinet
c) Large embryos and hatched chicks emit body heat (body-heat much warmer than the set).
By switching to micro-misting you can easily increase humidity to any level required without generating additional heat.
d) In addition, the evaporative effect of the micro-mist cools the set.
e) At nighttime, switch back to the heated element and create warm vapour instead of cool mist

Circulation & Passive Humidity Options

Your Greatlander Top Hatch incubator, unique in its class is divided into three chambers. The main Setting-Chamber has Quadraxial circulation. The Hatching-Chamber is lit, filtered and has its own gentle air supply. The Water-Tray-Chamber has means for adjusting the volume and the path of air-return, and the `training' of the return air so it enters either into the fan's inlet or into its exit path. A second `passive' water tray optionally increases humidity.

- The main fan at the top of the set blows obliquely down the left hand side setting up an anti-clockwise primary air stream in the setting-chamber.
- Fans at the rear of the hatching-chamber draw in air which then exits from the filtered ports at the front of the chamber, setting up a clockwise secondary air stream, mixing at right angles with the primary air stream.
- The return air from this primary stream may be drawn into the water-tray-chamber, by sliding across the shelf beneath the top water tray away or towards its near wall. This regulates the quantity of return air that flows over the humidity water tray on a path that leads to the rear of the fan, for diffusion.
- Any air that is excluded from the top path just described, crosses from right to left beneath the water-tray-chamber and re-diffuses in the primary air stream
- A `Passive' water tray beneath the hatching basket optionally increases humidity as required for hatching.

Cleaning

- The water tray is connected to the power supply by means of its own 3-pin plug so it may be taken out for cleaning. Its shelf is also removable.
- Do NOT immerse any of the wiring or the plugs. If water enters the electrics, it will `trip' the ELCB/RCD to your supply socket. Dry the wiring and the plug thoroughly in a **warm** place or in front of a fan. While the electrics are drying, you may place a baking tray of warm water in place of the water tray.
- Always disconnect the water tray power supply before handling the water.
- Do NOT use harsh abrasives on the colour-bond panels.
- Wipe, Blow and Vacuum the electrics and the mechanisms regularly
- Clean Egg trays and Basket with a high-pressure washer or in a dishwasher.
- Clean chick fluff that settles on the top of the turning motor's capacitor and terminal strip. (Bend a toothbrush; use compressed air)
- Clean the filters on the hatching chamber between each hatch or replace them
- Regularly clean chick fluff which is an excellent conductor and causes electrical shorts and fires

Shutting Down

When `shutting down' the incubator for a period of time, run it without the water tray in place for 1 hour.

The heater and fan will de-humidify the cabinet's interior and the electrical components.

In addition switch on the Sanitiser, in readiness for the next use.

Switch off and leave the top hatch and the front door open until the set cools.

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THE LOGIC CONTROLLER

The Logic Controller has been adjusted for temperature, humidity, egg-turning, exhaust/ventilation, etc. by Greatlander. You are provided with these values for your future reference. You can view the settings at any time by scrolling through the `F' & `P' Functions. (In addition, a set of Default Settings is held in permanent memory, refer to Page 5).

- ***If you need to change only the Temperature, adjust P2, P3 & P4 in a band.***
- ***If you need to change only the Humidity, adjust P8 & P9 in a band.***
- ***If you need to over-ride any of the other parameters, do so in small increments so you may observe the effects.***

The temperature and humidity sensors are made of highly precise micro-molecular materials. Please do not let the sensors come into contact with water directly. Dust and fluff must be regularly cleared on the surface of the sensors, or it will affect the measurement accuracy.

THE 4 SCREEN DISPLAY

• ***While the incubator is in the `normal working state'***

The TOP two screens, labeled **PV TEMP ^{0}C** and **PV WET %** respectively indicate the **P**resent in-Cabinet **V**alues. These screens change constantly as the controller `hunts' for your target values. Meanwhile the BOTTOM two screens labeled **SV TEMP ^{0}C** and S**V WET %** remain fixed. These screens indicate the **S**ET TARGET **V**ALUES

• ***While the incubator is in the `set values state'***

During changing instructions to your controller, the BOTTOM screens indicate the values for the particular function and guide you through the sequences available.

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CONTROL

The buttons that you use to control the incubator explained in detail above are the SET Button, the ▼ & ▲ Buttons, the OK button, and the LIGHT, SANITISING & FAN SWITCH button.

LED LIGHTS

- **FAN** The ventilating fan is operating
  a) The temperature needs lowering now
  b) A scheduled Ventilation Cycle is in progress
- **HEAT 1** First Heater element is on - Economy Mode (Terminals 23 & 24)
- **HEAT 2** Second Heater element is on - Boost Mode (Terminals 21 & 22)
- **UP** The egg carriage is performing an Up turn
- **DOWN** The egg carriage is performing a Down turn
- **WET** The Humidifier Power Outlet is energised
- **ALARM** The alarm is on (in case the audible alarm is muted or not activated)

WARRANTY – Read before you turn on your incubator

Whereas the purchaser has sole control over use of the equipment the purchaser releases the supplier from all responsibility for losses or damage from the equipment other than replacement of defective parts returned to the point of sale for exchange. Duration of the warranty is 36 Months for Hobby Use and 12 Months for Commercial Use. Freight to point of sale and return is at the client's expense. Proof is required of continuous Test & tag compliance. Plastic Egg Trays, Hatching Baskets, and water trays are excluded.

DISCLAIMER OF IMPLIED WARRANTIES:

There are no express warranties of merchantability fitness for a particular purpose or any other kind express or implied by law other than those expressly specified herein. The duration of any such warranties that are nonetheless implied by law for the benefit of a consumer shall be limited to a period of 6 months from purchase by the original purchaser or such other period as required by law.

LIMITATIONS OF DAMAGE:

The Supplier shall not be liable for any damages including but not limited to consequential special general indirect or incidental damages lost profits loss of reputation or other similar damages suffered or incurred by the purchaser or any other party including damages to the equipment or to the property of others or to persons and whether due to any failure of equipment parts failure loss of use or the negligence of another party or of the purchaser.

ARBITRATION

In the event that any dispute whatsoever arises with respect to this warranty either party may refer it to an independent arbitrator acceptable to both parties or else to an independent arbitrator appointed by the President of the Feather Clubs Association of Queensland or its successor and the parties shall first agree that the arbitrator's decision shall be final and binding in all respects and that the arbitrator shall determine who is to bear the costs of the referral.

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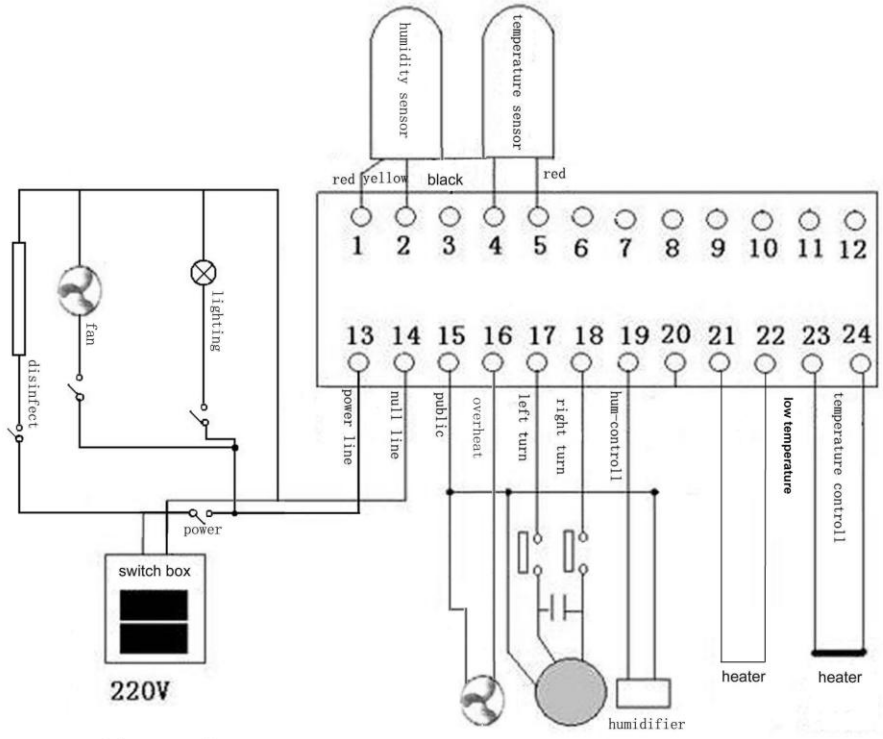
Greatlander welcomes all feedback and may alter its specifications from time to time.

Controller Wiring Diagram:



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POSITIONING OF THE TEMPERATURE SENSOR TO PROTECT YOUR INCUBATOR

This is a failsafe measure to protect the electrical components in your incubator in case the Equal Temp Fan develops a malfunction.

The pencil-shaped `Temperature-Sensor' is tied high in the set level with the controller ***Do NOT move the sensor from this position*** even though you will note that it is affected by the heat from the light globe. Operate the incubator normally with the lighting turned off.

In this position, the Temp Sensor will drive the incubator effectively. Your set has been calibrated at Greatlander to take account of any slight variation between the sensor placed high in the set and the temperature at the egg rack. However, it is placed in the optimum position to protect electrical components in case the fan malfunctions, by sensing the `pool' of hot air rising, and

switching the heater off and the ventilating fan on.
The thermo-stability of the wire sheathing, of the casings of the controller, limit switches, micro-electric sensors, etc., is not rated to withstand the excessive heat that may result from a fan failure.

If the fan shows ANY sign of wear or fatigue, shut down the incubator safely and replace the fan.

It must be understood that this measure will not protect the incubator if it is run without water in the tray. In such case, the humidity heater/pump will continue operating damaging components.
Being a powerful heater the immersion heater may also send the cabinet's temperature over-limit. The controller will **not** switch the humidifier based on the air temperature – only on the humidity. **Having water present is vital**.

USE OF FUNCTION F2 TO `BACKUP' THE FUNCTION OF THE LIMIT SWITCHES

This is the failsafe measure that provides an overriding level of control for the Limit Switches. (The movement has been timed at Greatlander and the duration recorded in your setting sheet as well as entered into your controller's F2 short term memory).

BACKGROUND

- ***The controller sends a flow of current through the limit switch, to the turning motor.***
- ***The limit switch is `normally closed' and `opens' when tripped.***
  `Open' disconnects the current flow, (thus stopping the turning motor).
- ***The controller's `default' duration of this flow is 3 minutes. (F2 = 180)***
- ***However most racks complete a turn in less than 45 seconds***
- ***Backup the Limit Switches by re-setting `F2' to closely-match the actual duration of the egg-turning movement of your individual set***

The procedure is as follows.

1 Press and Hold the SET Button and the ▼ Button simultaneously.
The bottom LED display will show

	9	0	F	1

Use the ▼ Button to decrease this `Interval Between Successive Turns' from 90 minutes to 1 minute and press the OK Button. This instructs the Controller to issue an automatic turn command every one minute instead of every 90 minutes.
After completing today's important changes, please set F1 back to 90 minutes.

2 The bottom LED display will now be showing

1	8	0	F	2

Use the ▼ Button to decrease this `Duration of the turning movement in seconds' from 180 seconds to 40 seconds and press the OK Button six times to exit the setting mode and return to the normal working state.

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3 The rack will now perform an automatic turn every 1 minute and 40 seconds. Observe the movement for at least three turns and time the duration of the last complete movement.
(Note that this `time' will vary for individual sets due the difference in the geometry between single tray and double tray racks, and due to the variation in the slack of the chain drive).

4 Now repeat Steps 1 and 2 above however this time adjust the value of F2 to about four seconds less than the actual duration.
Your aim here is to set the controller to switch off the flow of electric current a second or two before the limit switch is `tripped' by the rack.

5 In addition, check that the rack is making good contact with the limit switches. Grasp the rack's top bar with vice-grips and bend it inwards if necessary so as to ensure there is 20mm minimum of contact.

6 Restore F1 to 90minutes. See Steps 1 above.

7 Now when you perform manual turns (when loading/unloading trays), instead of leaving the rack horizontal, you should turn it until it trips one of the limit switches then turn it back briefly so it is away and on its way back to the opposite limit switch.
This process sets the controller up with the direction of the `next' turn in addition to resuming the `timed' turns from the correct starting point.

8 Periodically, please remove `chick fluff' that falls on the terminal strip on the turning motor and on the cross link capacitor - the small blue or brown module wired to the terminal strip. Chick fluff is an electrical conductor.

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If you are uncertain about anything please call and we will talk the process through.

Remember that you may halt automatic turning by setting F2 to Zero. You may then perform manual turns until a limit switch can be replaced.

INCUBATOR RUNNING IN HOT WEATHER

This is a `seasonal-precaution' notice to provide more positive cooling of the cabinet when ambient temperatures are expected to exceed 30°C. … Of course, you have already opened your vents, correct?

BACKGROUND

Some breeders keep incubating throughout the hot Australian summer.
Hot and dry weather conditions are challenging for all incubators.
This is especially true when hatching.

a) The humidifier may be on for longer periods, if programmed to maintain increased humidity
b) Using the Heated Element would warm the water in the tray, thus warming the air inside the cabinet
c) Large embryos and hatched chicks emit body heat (body-heat much warmer than the set).
By switching to micro-misting, the set can increase humidity to any level required easily and without adding unwanted heat.
d) In addition, the evaporative effect of the micro-mist cools the set.
e) At nighttime, switch back to the heated element and create warm vapour instead of cool mist

FREQUENTLY ASKED QUESTIONS

Does the incubator fan need to run continuously? Why does it have a switch?

Yes, it is essential that the equal temp fan runs continuously.

The fan is switched off momentarily to conserve heat and humidity when opening the door.

Do NOT operate the incubator without the fan running. This will cause damage by overheating.

Wire-sheathing will melt as will plastic switches and vital components such as the controller.

If the fan shows ANY signs of wear or fatigue, shut down the incubator safely and replace the fan.

Where is the best position for the sensors?

The Humidity Sensor (oblong box with slots) is best placed facing down tied to the underside of the rack's top rail

If you move it, be aware that it drives the humidifying function. Face its slots away from fan draughts or it will read low.

The Temperature Sensor (thin pencil shaped) must be as high as it can go inside the cabinet.

Here it will govern the heater and prevent dangerous overheating should the fan malfunction.

What will happen if the incubator runs out of water?

The controller will not distinguish that the tray is empty.

The controller will not turn off the humidifier's immersion element/pump.

In a very short time the humidifier heater would heat up the air in the cabinet/the pump overheat and fail

This may cause damage by overheating.

Wire-sheathing will melt as will plastic switches and vital components such as the controller.

Do NOT operate the incubator without water.

What are the recommended settings?

Each breeder has his or her own ideas. Successful breeders run their sets between 37.3°C & 37.8°C and 45 & 55%

Relative Humidity while Incubating - between 37.3°Cand 37.5°C and 55 - 62% RH while hatching.

Some breeders raise RH higher during hatching. Waterfowl benefit from higher humidity during hatching.

For a full list of `benchmark' settings consult your settings sheet or contact Greatlander.

How do I check my probes for accuracy? I want to be sure about my settings.

To check the air temperature at the egg rack, place another thermometer at the rack while the set is empty.

If the Temp probe needs calibration, read F5 of the user manual.

Note: Eggs older than 10 days emit metabolic heat and will distort the reading.

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To check the humidity probe, you will need a spoonful of table salt and a plastic bag.

Combine enough water with the salt so it clumps.

Place it in a sealed bag and hold the humidity probe in the air space above the salt. (Keep the salt out of the probe).

The top right hand screen should soon read 70%RH (+or- 1 or 2 percentage points)

If the humidity probe needs calibration, read F6 of the user manual.

How long will the incubator take to settle down from a cold start?

That depends on the ambient temperature and humidity and to a lesser extent, on the size of the cabinet.

Temperature normally settles itself out once the heaters shed all latent heat.

High humidity may need to be purged from the cabinet via the door.

What are the black plugs?

The black grommets are vents. They are removed to ventilate the set especially gradually in warming weather.

Why does the water in my humidity tray turn cloudy, murky, rusty, frothy? Is this harmful?

Most town water does not present this problem.

However tank water and some town water may cause any or all of the above.

Have your water analysed - Seek advice about treating it.

The humidifier element works by heating the water that is in contact with it into vapour.

The vaporised water rises. The impurities suspended in the water are left behind safely

However, the impurities that remain in the water increase as a proportion and so does their effect

I fill my gravity header tank from a bucket and it is difficult not to introduce dirt, etc?

If a large enough piece of dirt or grit makes its way to the float valve seat, it will stop it from closing.

In that condition, the header tank will run out of water, discharging into the water tray.

The water tray will overflow into the incubator and onto electrical components.

In a very short time the humidifier will run out of water.

This will cause damage by overheating, and damage components.

Wire-sheathing will melt as will plastic switches and vital components such as the controller.

If you have dirty water, fit some filtering material to the water-entry in the gravity tank.

Is there a correct way to place eggs in the trays?

You should place eggs blunt end up. The blunt end contains the air sac.

Some eggs are more elliptical than oval. To locate their air sac use a candling light (a small LED torch).

If you do not have enough eggs to completely fill a tray, arrange the eggs so trays are balanced.

Think of a `see-saw' ... start placing eggs in the middle and work out to the front and rear edges.

Is there an easy way to load/unload trays into the incubator?

Loading and unloading are done after first manually turning the egg cradles to the horizontal position.

To initiate a manual turn, see Page 5 of the manual.

If you have calibrated F2, return the rack to trip the limit switch then back it away for a second.

Where should I place my incubator?

Ideally, indoors in a room where there are no extreme changes in temperature and humidity.

Avoid cold draughts in cold weather.

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Avoid `stuffy' still air in warm weather

In warm weather take steps to prevent overheating.

Avoid north and west facing walls in metal sheds ... south wall is best

Open some vents - the ventilating fan normally purges hot air - open vents prevent it trying to pull a vacuum

Provide a gap of 30cm behind the ventilating fan

Open windows and doors to prevent hot air from lingering behind the exhaust fan

Create a draught by having a fan on a timer to come on in the middle of the day.

Aim the fan to `sweep' hot air away from the ventilating fan aperture

If the air temp is almost that inside the incubator or higher, turn the set off and wait until the temperature drops.

Is there a failsafe method for backing-up the operation of the Limit Switches?

The F2 Value should be fine-tuned to match the duration of your rack's movement.

To do the Fine-Tuning, Set F1 to 1 ... and set F2 to 40

This will initiate a rack turn about every 1 and 3/4 minutes.

Observe when the rack reaches the limit switches AND the `UP' `DOWN' LED lights.

Adjust the value of F2 so the LEDs go out just before the rack reaches the Limit Switches.

Record this value for later use. (Each rack varies slightly).

The aim is to have the controller shut the power as the rack is about to trip a limit switch.

Restore F1 to 90 minutes

Now when you perform manual turns, instead of leaving the rack horizontal, you should turn it until it trips one of the limit switches then turn it back briefly so it is away and on its way back to the opposite limit switch.

This process sets the controller up with the direction of the `next' turn in addition to resuming the `timed' turns from the correct starting point.

What if I am concerned about anything regarding the operation of the incubator?

Stop operating the incubator and open the door until your concerns have been resolved.

Cool it down safely - Consult your manual how - Contact Greatlander.

Help may also be available in these FAQ answers and in user forums.

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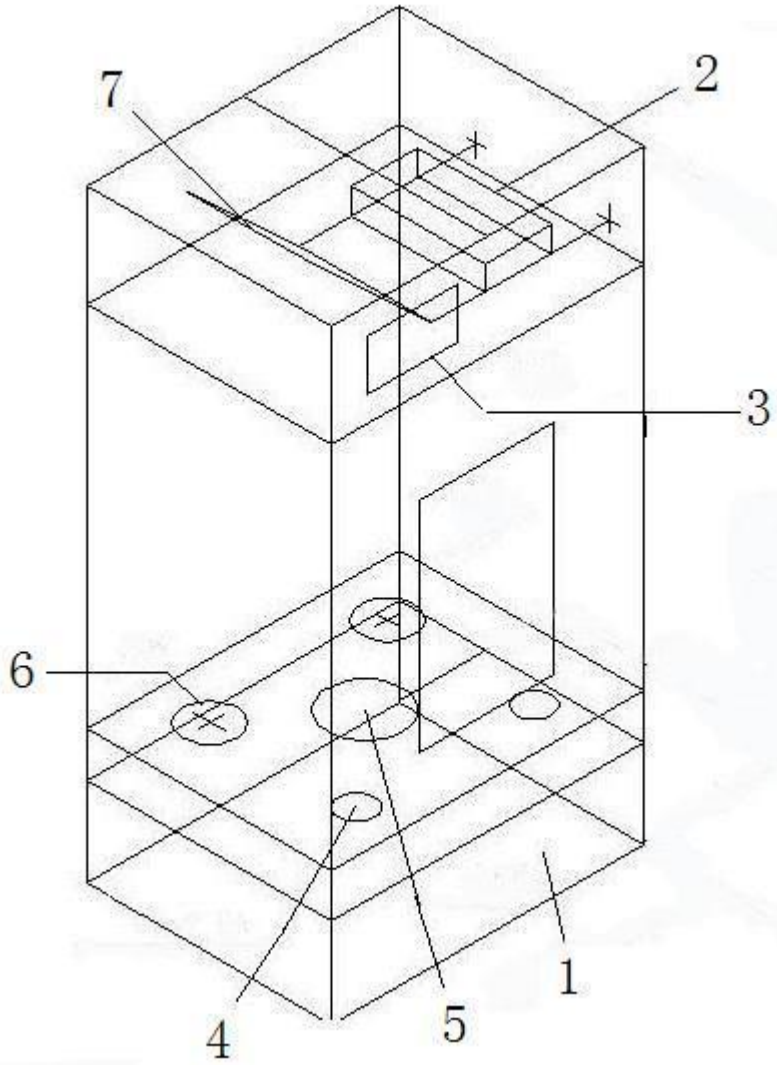

1	Hatching Chamber with Passive Water Tray	5	Viewing Port (removable) & LED `Cold' Lighting
2	Humidity Water Tray with Dual `Wet' Modes	6	HD Ball-Bearings Fans; Quadraxial Mixing & Inlets
3	MX18 Micro Computer & Double Pole Switch Array	7	Equal Temp Fan; Dual, `Sequential' Air Heaters
4	Air Return Outlets with Chick-Fluff Filters		